SUBJECT: Mission Services Customer Forum (MSCF) Meeting

DATE: February 21, 2002

PLACE: Goddard Space Flight Center, Building 3, Auditorium

TIME CONVENED: 1:00 p.m. **TIME ADJOURNED:** 4:45 p.m.

ATTENDANCE:
The attendance list is at the end of these minutes.

NOTE: Please refer to the presentations located in the MSCF website (http://npas19.honeywell-tsi.com/mscf/presentations) for details.

I. INTRODUCTION

The second Mission Services Customer Forum (MSCF) meeting was convened February 21, 2002 by Mr. Al Levine (NASA/GSFC).

- The MSCF provides an arena where customers and service providers can review issues of common concern.
- The MSCF is currently expected to continue on a quarterly basis.
- Attendee self-introductions occurred at Mr. Levine's request and were followed by a review of the forum's agenda.

II. ENTERPRISE PLANS – EARTH SCIENCE

Mr. Paul Ondrus (Earth Science Mission Operations Project Manager) presented Earth Science enterprise plans. Mr. Ondrus thanked the flight teams for their continuing high-quality support. He noted that budget concerns are the primary challenge identified in FY02 planning. As missions continue past their projected lifetimes, extended operations pose budget challenges. Mr. Ondrus felt that the CSOC Customer Service Representatives (CSR) require increased flexibility in the CSOC decision-making process. Currently, CSOC's decision-making process seems to always require the input of higher CSOC management, making the process seem slow and awkward. Mr. Ondrus felt that determining for what NASA was paying during extended mission operations was sometimes difficult.

III. ENTERPRISE PLANS – SPACE SCIENCE

No updates were provided for this subject.

IV. HUMAN SPACEFLIGHT

Mr. Ted Sobchak (NASA Network Director for Human Spaceflight) presented an overview of current activity that included: the most recent Space Shuttle manifest; Space

Shuttle programmatic changes; ISS programmatic changes; and significant Network changes. Please refer to the presentations located in the MSCF website (http://npas19.honeywell-tsi.com/mscf/mscf_20020221/mscf_presentations.html Human Spaceflight) for details.

Space Shuttle Manifest

The Space Shuttle manifest detailed payloads, and scheduled launch and landing dates for the next eight STS missions. Six out of the eight missions are related to ISS construction, crew rotation, and resupply. Mr. Sobchak noted that STS-112 (08/2002) will establish a second S-band string onboard ISS.

STS-107 includes a payload (the CANDOS experiment) that is a communication technology demonstration exercising a low-power transceiver. DSMC will coordinate simultaneous SN and GN for CANDOS.

Mr. Sobchak thanked JSC for the quality support it continues to provide Space Shuttle and ISS Network operations.

Space Shuttle Programmatic Changes

NASA HQ has informed the Air Force that NASA will no longer require AFSCN RTS support. As a result, on-orbit requirements are increasing in all areas. There is now less flexibility in scheduling TDRS services thus driving the need for coordination with TDRSS maintenance periods. WFF, MILA, and DFRC will increase their role in on-orbit operations. STS-113 will be the last flight using RTS support under current arrangements.

A concern was expressed regarding the impact of increased WFF support requirements on communication links. Mr. Sobchak stated that a single T-1 line from WFF should provide sufficient bandwidth to support both Space Shuttle voice and data streams; however, the GN may still have a possible scheduling issue. The elimination of RTS support may increase the potential for network support conflicts that will be difficult to resolve. Refer to Action Item MSCF-02-21-01.

Significant Network Changes

MILA is installing/upgrading additional PTPs to enable TT&C support for scientific spacecraft. The possibility of making the PTPs accessible to other locations through the IONet is being investigated.

V. SPACE NETWORK

No formal presentation was made for this area; however, attendees noted several updates/changes to the Space Network's status.

Mr. Levine noted that TDRS-I is scheduled for launch on March 8, 2002.

Mr. Keiji Tasaki (NASA/GSFC) noted the checkout of a ground system fix at WSC. TDRS-8 will perform the checkout sometime around the end of March 2002.

Ms. Cathy Barclay/CSOC reported that a fix for an NCC scheduling problem has been identified and is being worked.

Questions were raised regarding the ability of all missions to handle the processing of data with the upcoming TDRS name changes. Ms. Barclay reported that when testing was done in 1999, all existing customers were able to support the name change. (c.f. Action Item MSCF-02-21-05)

VI. GROUND NETWORK

Ms. Lynn Myers (NASA/GSFC) presented Ground Network (GN) status. Please refer to the GN presentation located in the MSCF website (http://npas19.honeywell-tsi.com/mscf/mscf_20020221/mscf_presentations.html GN) for details.

Ms. Myers' presentation included an overview of the GN's components and the wide range of antennas and systems that provide worldwide support. Ms. Myers specifically noted the following technologies and recent upgrades:

Ground Network

1. Upgrades for the Aqua Mission at WPS (tape-only capability).
2. Ka-band Ground System Demonstration.

Range

1. Autonomous Flight Termination System.
2. GPS/Iridium-based Wind Weighting.
3. Flight Modem.
4. Expendable Launch Vehicle Transceiver.
5. STARS and CANDOS.
6. Advanced Surveillance System.

The presentation continued with a brief overview of the GN's extensive list of current customers including NASA, the U.S. Army, U.S. Navy, U.S. Air Force, and commercial enterprises.

Ms. Myers noted that organizationally, the GN now comes under the management of NASA HQ Code Y.

For additional information regarding the GN, access the following URL: http://msp.gsfc.nasa.gov/mainindex.htm

VII. Flight Dynamics Facility (FDF) Status

Mr. Tim Thompson/CSOC presented current FDF status. He stressed that FDF would be very busy through April with overlapping support periods for seven scheduled missions.

FDF will be supporting the Aqua Mission in April, providing daily precision definitive ephemerides of 20-meter 3-sigma accuracy. The RTOD Orbit Determination System, which has already been in operation for 2 years, has demonstrated its ability to meet this requirement and proven its effectiveness. Landsat-7 was supported using this system.

FDF is increasingly being called upon to provide spacecraft lifetime studies and reentry predictions. In July 2000, FDF worked orbit decay predictions for the recently terminated EUVE Mission.

FDF is using Virtual Network Computing (VNC) to export STK displays. This application of new technology enables near real-time export of a display from one workstation to another within the Code 290 firewall. The application was used during STS-108 support. FDF plans to apply this technology to a wider range of exported displays.

The move from GSFC/Building 28 to Buildings 13 and 25 is continuing. The entire process is scheduled for completion in May 2003. This move coincides with the DSMC Operations transition to WSC.

VIII. DSMC STATUS

Ms. Cathy Barclay/CSOC presented Data Services Management Center (DSMC) status. A brief overview of the DSMC migration effort's history and expected impact was presented. She noted that the NCC's move to WSC involves no functional enhancements, and will hopefully be transparent to users.

The Wallops Orbital Tracking Information System (WOTIS) has already been relocated to the DSMC. The system has been tested and is operational. Various GN scheduling functions will transition to the DSMC in a phased process.

Space Network (SN) functions will also be transitioning to the DSMC in a phased process. The NCCDS suite is already relocated and is undergoing operations evaluation through February. An operational transition date for the NCCDS suite is under review.

Mr. Ted Sobchak expressed some concern regarding the DSMC transition and its potential impact to the Space Shuttle Program. He specifically questioned how the Space Shuttle Program would be notified of changes in DSMC operations/procedures. Ms. Barclay stated that Network Advisory Messages (NAM) would continue to inform all DSMC users of changes.

IX. NISN SERVICES SUPPORTING MISSION CUSTOMERS

(http://npas19.honeywell-tsi.com/mscf/mscf_20020221/mscf_presentations.html)

Mr. Scott Douglas (NASA/GSFC) presented the current status of NISN support to its wide range of customers. He focused on four major areas of current service:

1. 4800-bit block encapsulation.
2. Real-time critical routed data service.
3. Mission-critical routed data service.
4. Mission voice service.

Mr. Douglas told the forum that current users of the 4800-bit block mode should definitely begin to plan for the elimination of this encapsulation method, possibly in FY04. He felt that the 4800-bit block encapsulation method was no longer sustainable over the long term and thought that CSOC should begin to work with NASA/NISN to move customers away from this encapsulation method.

Connected to any move away from the 4800-bit block encapsulation mode will be a requirement to update NISN PSLAs to reflect changes. Forum attendees expressed concern because use of the 4800-bit block is identified in their mission's PSLAs as critical. Any move away from the old bit block will require reengineering by the projects and drive up costs. Potential security problems with any move to native IP formats (on the IONet) will need to be addressed by NASA Security and NISN. Refer to Action Item MSCF-02-21-02.

Mr. Douglas noted that regarding to mission-critical routed data service and mission voice service, that the 2-hour commitment to restore service does not apply to Norway due to weather conditions there. The possibility of a future workaround to an interruption in Norway support was mentioned.

NISN is currently planning for two major changes: the Mission Network Modernization and the Mission Voice System Replacement (MVS). CSOC plans to discuss these efforts with NASA customers in a working group forum run by CSOC. Each upgrade will be thoroughly tested with the customer. Mr. Douglas stated that CSOC is taking the lead on the MVS upgrade, and the extent of expected NISN support to this effort is as yet unclear. NISN is not fully aware of CSOC's plans in this area.

As an issue, Mr. Douglas noted that the effort to produce NLIC spares had fallen by the wayside for lack of funding. CSOC needs to address this matter before the lack of NLIC spares impacts WSC operations negatively.

X. RESOURCE ALLOCATION PLANNING AND SCHEDULING PROCESS

Mr. E.S. Burke (JPL) presented an overview of the operations of JPL's Resource Allocation Planning and Scheduling Office (RAPSO). RAPSO is responsible for scheduling DSN support and works with NASA HQ and projects to allocate resources. RAPSO is continually engaged in long-range planning for DSN support, and Mr. Burke presented several charts detailing future DSN support forecasts.

In the near-term, projects should be aware that January 2004 will be a period of high DSN support activity, and launch support from the DSN should not be counted on.

Mr. Burke also detailed a RAPSO appeal process that addresses support conflicts and resource allocation problems.

Various DSN mission planning set documents can be viewed online at the following URL: http://rapweb.jpl.nasa.gov/planning.htm

XI. DOCUMENTATION STATUS (Ms. Shubhangi Ambardekar /CSOC)
NOTE: This presentation is available in the MSCF website (http://npas19.honeywell-tsi.com/mscf/presentations) as Documentation Status.

discussed the status of DMRs and PSLAs for future missions.

CSOC facilitates DMR production as the document moves from the projects to CSOC, detailing project requirements (refer to Action Item MSCF-02-21-03). Although the goal is to have DMRs in place 6 months before a mission's launch, this does not always happen. Consequently, CSOC is looking into new processes for creating the DMRs.

FY02 PSLA Status – As the mission set continually changes, support requirements also change, which impacts costs. PSLAs for FY02 with prices will be released in several weeks.

FY03 PSLA Status – Planning estimates have been given to NASA. CSOC desires concurrence with its plans by June 2002 in order to have the PSLAs in place by September 30, 2002.

XII. LOADING AND RESOURCE ISSUES (Mr. Allen Levine)

Although support commitments continue to increase (largely in the GN area), sufficient resources exist to satisfy new requirements. NASA is continues its efforts to sell TDRS resources to commercial users on a non-interference basis with NASA programs. In-orbit TDRS spares will assure continued services.

Mr. Levine presented several charts detailing GN and SN mission models through 2005. He also discussed the GN and SN load forecast through 2005.

DataLynx, Santiago, and USN support are included by CSOC in cost planning. Mr. Levine stated that where appropriate, NASA will work with these sites.

CSOC has taken the initiative to provide a tool at the DSMC that will work to mitigate scheduling conflicts due to RFI. CSOC is of the opinion that NASA needs to determine its support priorities before a solution can be put in place. At commercial sites, NASA mission priorities may conflict with pre-existing contractual site commitments. Refer to Action Item MSCF-02-21-04. Support to NASA missions is defined by contract on a

mission-by mission basis. Additional NASA support requirements need to be negotiated with CSOC (as the purchaser of commercial service). Additional support to NASA missions at commercial sites above and beyond that already negotiated through contracts will involve contract modifications.

XII. ACTION ITEMS

ACTION ITEM: MSCF-11-15-01
ASSIGNEE(S): Shuby Ambardekar (GSFC CSR Manager) and Jon Walker (CCM)
ACTION: Look into generating an ICD between GSFC and the DSN.
STATUS: Closed. The action item has been moved to the SOCB/CMSM Working Group responsibility.

ACTION ITEM: MSCF-11-15-02
ASSIGNEE(S): Steve Currier (WFF)
ACTION: Re-present commercial resources at the next MSCF meeting.
STATUS: Closed. Action item combined with MSCF-11-15-08.

ACTION ITEM: MSCF-11-15-03
ASSIGNEE(S): Michele Crizer (GSFC/LandSAT-7)/John Grassel (GSFC/CSR)
ACTION: Update DMR and PSLA for Landsat-7.
STATUS: Open. The LANDSAT-7 project has requested John Grassel to initiate the updates.

ACTION ITEM: MSCF-11-15-04
ASSIGNEE(S): All Projects
ACTION: Ensure issues are raised sufficiently early to ensure that adequate time is available to address mission concerns (i.e., compatibility testing, requirements, etc.) and thus possibly avoid a need to form TIGER teams.
STATUS: Open. The activity is ongoing.

ACTION ITEM: MSCF-11-15-05
ASSIGNEE(S): NISN
ACTION: Provide a presentation on NISN status at the next MSCF meeting.
STATUS: Closed. The requested presentation was provided during the 02-21 forum.

ACTION ITEM: MSCF-11-15-06
ASSIGNEE(S): Cathy Barclay (GSFC)
ACTION: Provide a quick update on the DSMC schedule at the next MSCF meeting.
STATUS: Closed. The requested presentation was provided during the 02-21 forum.

ACTION ITEM: MSCF-11-15-07
ASSIGNEE(S): DSN
ACTION: Provide a presentation on DSN plans at the next MSCF meeting.
STATUS: The requested presentation was provided during the 02-21 forum.

ACTION ITEM: MSCF-11-15-08
ASSIGNEE(S): Service Providers
ACTION: Provide a briefing for the next MSCF meeting.

STATUS: Open. A DataLynx presentation was prepared; the status of an SDS presentation is unknown; a presentation exists for AGO, but it does not address technical capabilities; and a USN presentation is being developed.

ACTION ITEM: MSCF-02-21-01
ASSIGNEE(S): NISN (S. Douglas) & GN (L. Myers)
ACTION: Look at the scheduling capacity problem involving the WFF/T-1 lines which may result from the loss of RTS support to HSF.
STATUS: Open.

ACTION ITEM: MSCF-02-21-02
ASSIGNEE(S): NISN (S. Douglas), SN (K. Tasaki), & CSOC Engineering (R. Nguyen)
ACTION: Meet and determine the current status of the 4800-bit block versus IP problem, and how to move forward toward a solution.
STATUS: Open.

ACTION ITEM: MSCF-02-21-03
ASSIGNEE(S): Customer Commitment (S. Ambardekar)
ACTION: Provide a report regarding projects exceeding their documented requirements.
STATUS: Open.

ACTION ITEM: MSCF-02-21-04
ASSIGNEE(S): DSMC (C. Barclay) & Network Service Manager (A. Levine)
ACTION: Discuss and recommend a process to address Interference Management priorities.
STATUS: Open.

ACTION ITEM: MSCF-02-21-05
ASSIGNEE(S): SN (K. Tasaki & R. Schonbachler)
ACTION: Determine a timeframe for final conversion to the new TDRS naming convention for the NCC/DSMC scheduling system.
STATUS: Open.

(Original Approved By:)
Allen Levine
NASA/GSFC

ATTENDANCE:

Name E-Mail	Organization/Function	Phone
Al Levine Allen.J.Levine.1@gsfc.nasa.gov	NASA/GSFC	(301) 286-9436
Marc Alvarez malvarez@pop400.gsfc.nasa.gov	HTSI/CSOC	(301) 286-7161
Shuby Ambardekar shubhangi.ambardekar@csoconline.com	CSR	(301) 805-3845
Leslie Ambrose Leslie.L.Ambrose.1@gsfc.nasa.gov	GSFC/MCM	(301) 286-7767
Joe Aquino joseph.m.aquino1@jsc.nasa.gov	JSC/SOMO	Not provided
Martin Arluciaga marluciaga@cec.uchile.cl	AGO/CSOC	56-2-672-1816
Bly Barbehenn mary.b.barbehenn.1@gsfc.nasa.gov	CSR	(301) 286-8308
Cathy Barclay cathy.barclay@gsfc.nasa.gov	DSMC	(301) 805-3221
David Bissett bissett_david_ii@bah.com	CSOC	(301) 805-5416
Walter Booth walter.booth@csoconline.com	CSR	(301) 805-3347
Eugene Burke Eugene.S.Burke@jpl.nasa.gov	JPL/DSN	(818) 354-6577

ATTENDANCE (continued)

Name E-Mail	Organization/Function	Phone
Richard Campion Richard.Campion@honeywell-tsi.com	DataLynx	(410) 964-7946

Jim Cappellari jim.cappellari@gsfc.nasa.gov	GSFC/FDF	(301) 805-3700
Steve Coyle Steven.E.Coyle@gsfc.nasa.gov	GSFC/MD	(301) 286-9335
Michele Crizer michele.crizer@gsfc.nasa.gov	HTSI/Landsat-7	(301) 614-5541
Pat Crouse Patrick.L.Crouse.1@gsfc.nasa.gov	GSFC/MD	(301) 286-9613
Angela Culley angela.culley@csoconline.com	AS&T/GSFC	(301) 805-3097
Gustavo Cumsille Email not provided	GN/AGO	Not provided
Joe Curley joseph.curley@honeywell-tsi.com	HSF	(301) 805-3299
Don Davenport donald.g.davenport.1@gsfc.nasa.gov	CSR	(301) 286-0702
Adrienne Davis adrienne.davis@csoconline.com	CSR	(301) 805-3357
Dave Davis david.l.davis@gsfc.nasa.gov	WFF/NGN	(757) 824-1444
Scott Douglas Scott.C.Douglas.1@gsfc.nasa.gov	GSFC/NISN	(301) 286-9550
Evan Eller evan.eller@honeywell-tsi.com	GSFC/Honeywell	(301) 805-3636
Reily Elwood Reily.J.Elwood.1@gsfc.nasa.gov	Fred Harold Assoc.	(301) 286-6492

ATTENDANCE (continued)

Name E-Mail	Organization/Function	Phone
Curtis Emerson	GSFC/Alternate TMR	(301) 286-7670

curtis.emerson@gsfc.nasa.gov		
Robbie Frazier robert.b.frazier.1@jsc.nasa.gov	CSOC/FOT	(281) 483-4444
Michael Furman michael.furman@gsfc.nasa.gov	CSOC	(301) 805-3096
Paulino Garza Paulino.Garza.1@gsfc.nasa.gov	GSFC/MCM	(301) 286-7359
Chuck Gavaletz chuck.gavaletz@csoconline.com	CSOC/GN	(301) 805-0350
Neeru Gilotra ngilotra@csc.com	CSOC	(301) 805-3757
Luis Goni Email not provided	AGO/GN	Not provided
Ken Griffin Kenneth.R.Griffin.1@gsfc.nasa.gov	CSOC/GN	(757) 824-2478
Bill Guit William.J.Guit.1@gsfc.nasa.gov	TOMS/Mission Director	(301) 614-5188
Bob Hamilton bhamilto@csc.com	CSC/NPP	(301) 282-2082
Stephen Harris stephen.harris@csoconline.com	AS&T/CSOC Docs	(301) 805-3899
Jay Heberle jheberle@uspacenet.com	USN	(410) 586-9508
Joe Howard jhoward@pop500.gsfc.nasa.gov	EOS/Aura	(301) 614-5412

ATTENDANCE (continued)

Name E-Mail	Organization/Function	Phone
Sandy Hunter sandy.hunter@gsfc.nasa.gov	CSR	(301) 805-3300

David Jacintho david.jacintho@gsfc.nasa.gov	GSFC/Business Mgr.	(301) 286-9476
Dave Joesting david.joesting@gsfc.nasa.gov	CSOC	(301) 805-3500
Brad Johnson brad.johnson@csoconline.com	CSR	(301) 805-3158
George Johnson gjohnson@qssmeds.com	POES	Not provided
Ronald Johnson rjohnson@pop500.gsfc.nasa.gov	GSFC	(301) 286-8875
Chad Jordan Email not provided	Not provided	Not provided
J.B. Joyce jbjoyce@eta.pha.jhu.edu	FUSE/MM	(410) 516-4256
Margarita Kemp Margarita.T.Kemp.1@gsfc.nasa.gov	GSFC/NISN	(301) 286-7535
Steve Kremer steven.e.kremer.1@gsfc.nasa.gov	WFF/EOS	(757) 824-1114
Blake Lorenz Blake.T.Lorenz.1@gsfc.nasa.gov	GSFC/MCM	(301) 286-5559
Ed Macie Edward.J.Macie.1@gsfc.nasa.gov	GSFC/EOS	(301) 286-0762
Maureen Madden Maureen.P.Madden.1@gsfc.nasa.gov	GSFC/MD	(301) 286-8231
Charles Mansfield Charles.A.Mansfield.1@gsfc.nasa.gov	CSOC/FOT	(301) 805-3406

ATTENDANCE (continued)

Name E-Mail	Organization/Function	Phone
John Martin John.B.Martin.1@gsfc.nasa.gov	GSFC/IMDC	(301) 286-8892

Eric Mathis eric.mathis@honeywell-tsi.com	CSR	(301) 286-6538
Luis Matus Email not provided	AGO/GN	Not provided
David Morris David.G.Morris@jpl.nasa.gov	JPL	(818) 393-3535
Lynn Myers lynn.myers@gsfc.nasa.gov	GSFC/GN	(301) 286-6343
Richard Nguyen Richard.nguyen@csoconline.com	CSR	(301) 805-3194
Paul Ondrus Paul.J.Ondrus.1@gsfc.nasa.gov	GSFC/EOS	(301) 614-5347
Jim Owen jowen@class.gsfc.nasa.gov	GSFC/Class	(301) 809-2242
Ray Pages Raymond.J.Pages.1@gsfc.nasa.gov	GSFC/GSM	(301) 286-6012
Pete Pataro Peter.J.Pataro.1@gsfc.nasa.gov	GSFC/HST	(301) 286-2604
Joe Polesel apolesel@csc.com	CSOC	(301) 805-3650
Bill Potter William.J.Potter.1@gsfc.nasa.gov	GSFC	(301) 286-5343
Theresa Richter trichter@hst.nasa.gov	GSFC/HST	(301) 901-6127
Bob Rodriguez roberto.rodriguez@gsfc.nasa.gov	CSR	(301) 805-3325

ATTENDANCE (continued)

Name E-Mail	Organization/Function	Phone
Donna Sadof Donna.M.Sadof.1@gsfc.nasa.gov	GSFC/PIM	(301) 286-7588

Rich Sanidad Federico.C.Sanidad.1@gsfc.nasa.gov	CSOC/FOT	(301) 286-2304
Mike Schaub mike.schaub@csoconline.com	Mission Set	(301) 805-3291
Bruce Schneck bruce.schneck@csoconline.com	CSR	(301) 805-3018
Mat Schwahler schwahler@gsfc.nasa.gov	GSFC/GSPM	(301) 614-5302
Gene Shackelford eshackel@qssmed.com	Not provided	Not provided
Rolf Skatteboe Rolf.skatteboe@spacecentre.no	GN/SKS	Not provided
Rance Skidmore rskidmore@uswest.net	GOES	Not provided
Joel Smith jpsmith@hst.gov	HST	(301) 286-4051
Ted Sobchak Ted.C.Sobchak.1@gsfc.nasa.gov	GSFC/MCM	(301) 286-7813
Bob Sodano Robert.J.Sodano.1@gsfc.nasa.gov	GSFC/MD	(301) 286-6506
Ed Soter ed.soter@honeywell-tsi.com	CSOC/TRMM	(301) 286-2304
James Stevenson james.stevenson@honeywell-tsi.com	CSOC/NPAS	Not provided
Keiji Tasaki ktasaki@pop500.gsfc.nasa.gov	GSFC/450 Mgmt	(301) 286-9370

ATTENDANCE (continued)

Name E-Mail	Organization/Function	Phone
Greg Troendly gregory.troendly@csoconline.com	CSOC/IDIQ Mgr	(301) 352-2235

Tim Thompson thompso@csc.com	GSFC/FDF	(301) 286-5314
Luis Tsuji tsuji-luis@bah.com	Booz Allen	(301) 805-5455
William Watson William.A.Watson.1@gsfc.nasa.gov	GSFC/RSDO	(301) 286-1289
Tony Williams anthony.williams@honeywell-tsi.com	HSF	(301) 286-4286
Stephania Young Stephania.B.Young.1@gsfc.nasa.gov	CSOC	(301) 805-3116
Lee Zapp Lee.Zapp@csoconline.com	CSOC/JSC	Not provided